The Glasgow Naturalist (2012) Volume 25, Part 4, 119-147

SHORT NOTES

Interesting Aculeate records from Glasgow, including eight new species records for Lanarkshire, with reflections on their wider distribution in Southern Scotland

Jeanne Robinson[1] and Cathy Fiedler[2]

[1]Jeanne Robinson, Curator of Entomology, Glasgow Life, Glasgow Museums, Kelvingrove Museum and Gallery, Glasgow, G3 8AG.
[2]Cathy Fiedler, Centre for Ecology and Hydrology, Edinburgh, EH26 0QB.

[1]E-mail: jeanne.robinson@csglasgow.org
[2]E-mail: catedl@ceh.ac.uk

INTRODUCTION

With the exception of the bumblebees, there has been a general lack of recording for the aculeates in south west Scotland, least of all in urban areas such as Glasgow. They are a fascinating but intimidating group for the uninitiated. They can be challenging to identify and user friendly taxonomic guides are not readily available; consequently general naturalists tend to shy away from them when compiling their biological records. Published articles and our museum collections reveal more active aculeate recording during the early part of the 20th century (see results), coinciding with the publication of identification keys, which often help generate an interest. There are a few members of the Bees, Wasps and Ants Recording Society (BWARS) that have been actively recording in Scotland recently, but there is still much to do to address the gaps in our knowledge of the current species distribution. This paper presents interesting records resulting from fieldwork in Glasgow and from specimens submitted for identification in 2009. In addition to this, earlier local records have arisen from the identification of undetermined museum specimens. The 2009 records include six species that have not previously been recorded from Lanarkshire (VC77) and two species which were thought to be new but turn out to have been active here longer than expected. Historical records compiled from museum collections and publications are also presented; these records provide a valuable insight into the wider and historical distribution of these species in Scotland in relation to our recent findings.

The principal Scottish aculeate collectors whose records and specimens were examined to produce this article include John Russell Malloch and Andrew Adie Dalglish, who collected and documented the aculeates for *The Fauna and Flora of the Clyde Area* (Elliott et al. 1901) and deposited many specimens with the Glasgow Museums (GM). James Joseph Francis Xavier King, whose prolific collecting between 1877 and 1930 has yielded useful information on species distributions and abundance throughout Scotland, and provided a substantial reference collection for researchers. King's collection is housed at the University of Glasgow's Hunterian Museum (HM). William Evans (Evans 1900, 1901), who recorded and published his findings about the aculeates in the Lothians, Clyde and beyond, T. M. McGregor (McGregor, 1893) for those of Perthshire, James Clark (Clark, 1909) who, with the assistance of Henry Thomas did the same for Ayrshire and Arran and A. B. Duncan, a contemporary collector, who recorded in many parts of Scotland in the 1970s and 80s; all of whom have specimens deposited at the National Museum of Scotland (NMS).

METHODS

Fieldwork was under taken by the authors during warm sunny days between April and the end of July 2009, which ensured that insects were active. Specimens were collected by sweep netting individuals on the wing or targeting nesting sites in the case of species nesting in aggregations. Other specimens were collected directly into a pot whilst foraging on flowers or at rest on the ground.

Specimens were identified using Else (in prep) and the *Nomada* test key (Stubbs, 2007). The voucher specimens from the fieldwork and identifications for 2009 are housed with either Glasgow Museums (GM) or the Hunterian Museum (HM), Glasgow. Previously unidentified specimens housed at the GM were identified by Cathy Fiedler as part of her Natural Talent Hymenopterist apprenticeship with the British Trust for Conservation Volunteers (BTCV).

Recent species distributions were checked online using the BWARS database, via the NBN Gateway (BWARS, 2010 and NBN, 2010) and the Scottish Aculeates List (SAL, 2010). The Glasgow Species Audit list 2009 (GSA, 2009) was also examined. The audit is kept by the Local Records Centre at GM and details published and submitted floral and faunal records dating from 1801. Published records from across Scotland were identified on the Scottish Invertebrates Reeords Index (SIRI), which is housed at the NMS. The collections of the GM, HM and NMS were inspected for specimens from Glasgow and the

surrounding areas. Where Scottish records were numerous for a species on the NBN or in the museum collections, only key records are included in the results data, which are generally those from south west Scotland

The species records that resulted from this study have been passed on to BWARS for incorporation in their national recording scheme and to the compiler of the Scottish Aculeates List for information.

RESULTS

Results below are from museum collections and publications. Collections are referenced if data was collected directly from a specimen – the name of the collection the specimens are housed at are given in brackets i.e. (GM), (HM) or (NMS). Publications are referenced as standard and (NBN) indicates data was from the NBN database.

Andrena clarkella

Renfrewshire, Giffnock, collected by J. R. Malloch pre 1901 (Elliot et al. 1901); Ayrshire, Craufurdland, Dalrymple, Ness Glen nr. Dalmellington, collected by J. Clark, 1907-1909 (Clark, 1909), Irvine, collected by A. Dalglish, pre 1901 (Elliot et al, 1901), Clyde Islands, Arran, Lamlash, collected by J. Clark, 1908 and Brodick, collected by W. Evans, pre 1909 (Clark, 1909); West Lothian, Drumshoreland, collected by W. Evans, 1902 (NMS); Midlothian, Inveresk, collected by W. Evans, 1901 (NMS) and Balerno, various collectors, 1900-1938 (NMS); Dunbartonshire, Murroch Glen, collected by J.R. Malloch pre 1901 (GM); Stirlingshire, Callander, collected by W. Evans 1900 and 1902 (NMS); West Perthshire, Dollar, collected by W. Evans, 1897, (NMS); Dumfries and Galloway, Castlehill, collected by A.B. Duncan, 1974 (NMS); Wigtonshire, Southerness and Torrs, collected by A.B. Duncan, 1981-1983 (NMS).

Bombus sylvestris

Midlothian, 2006 (NBN), Balerno, Anon, 1922 (NMS); Mid/West Lothian, 2008 (NBN); Dunbartonshire, Bonhill, collected by J.R. Malloch, c1900 (GM); Ayshire, 1995 and 2008 (NBN), Dreghorn, Anon., 1923 (NMS); Wigtonshire, 2005, and Wigtonshire/Kirkcudbrightshire, 1987 (NBN); Dumfriesshire, 1975 (NBN), Newlands, collected by A. B. Duncan, 1929 (NMS); near Kirn in Argyll, K. M. Guichard, 1939 (Guichard, 1940) and more widely across Scotland including Inverness-shire (NMS) Fladday (Guichard, 1940) and Morayshire (HM).

Colletes daviesanus

Lanarkshire, Glasgow, Kelvingrove Park collected by F.R. Woodward, 4th July 1984 (GM); Midlothian, Musselburgh, collected by W. Evans, 1900 (NMS); Dumfriesshire (SIRI/NBN); and more widely across Scotland including Fife (NMS), Perthshire (McGregor, 1893), Morayshire (HM) and supposedly the Hebrides (SIRI). The Hebrides specimen is however likely to be a misidentification of *C. floralis*.

Lasioglossum calceatum

Lanarkshire, Glasgow, Glasgow Botanic Gardens, 12th August 1984 and Kelvingrove Park, 8th August 1983, collected by R. Sutcliffe, (GM); Renfrewshire, Kilbarchan, F.J. Ramsay, 1944 (NMS); Ayrshire, Clyde Islands, Arran, Anon., 1900 (NMS); Dunbartonshire, Loch Lomond, collected by R. Sutcliffe, 26th May 1986 (GM), Bonhill, collected by J.R. Malloch, 1901 and Anon., 1900 (GM and NMS respectively); common in the south of Dumfriesshire in May and Autumn circa 1940 (Murray, 1940), and more widely distributed records include Perthshire (GM), Aberdeenshire (HM), Kincardineshire (HM), Morayshire (HM).

Lasioglossum fratellum

Stirlingshire, Mugdock Wood, collected by J. Cooter, 1976 (GM); Renfrewshire, Kilbarchan, collected by F.J. Ramsay, 1944 and 1947 (NMS); Ayrshire, Irvine Moor, Anon., 1900 (NMS), Arran, collected by Waterston, 1936 and 1937 (NMS) and Corrie, 1939, K. M. Guichard (Guichard, 1940); Bute, Rothesay, Anon., 1901 (NMS); East Lothian, Longniddry, Anon., 1895-1898 (NMS) and Aberlady, collected by W. Evans, 1895 and 1896 (NMS); Dunbartonshire, Bonhill, collected by J.R.Malloch, 1901 (GM); Argyll, Alt Broiglechan, Anon., 1988 (GM) and Glen Nant, collected by J. Cooter, 1978 (GM); and more widely across Scotland including Perthshire (NMS), Invernesshire (HM, NMS, Guichard, 1940), Colonsay (NMS), Aberdeenshire (HM), Morayshire (HM), and possibly Sutherland (HM).

Lasioglossum smeathmanellum

Ayrshire, Shewalton Pits, collected by J. Robinson, 2009 (GM), Arran, Brodick, 1909 (Clark, 1909), Kilmarnock, collected by J. Clark, 1908 (Clark, 1909), the Dean and Fenwick 1907-1909 (Clark 1909), Ness Glen nr Dalmellington, 1909 (Clark, 1909); Midlothian, 1995 (NBN); East Lothian, Haddington 1996 (NBN); Dunbartonshire, Bonhill and Cardross, collected by J.R. Malloch, 1901 (GM), Elliot et al., 1901); Dumfriesshire, nr Gretna, J. Murray, circa 1940 (Murray, 1940) and more widely across Scotland including Perthshire (McGregor 1893, Carter 1901, Rothney 1906), North budes (SIRI), Morayshire (HM).

Megachile willughbiella

Renfrewshire, Darnley, Waulkmill Glen collected by E. G. Hancock, 1993 (GM/Hancock, 1994); Ayrshire, Craufurdland, 1908, (Clark, 1909) nr Kirk Alloway, 1907-1909 (Clark, 1909), Ness Glen, 1907-1909 (Clark, 1909), Kilkerran, collected by Henry Thomas, 1908 (Clark, 1909), and Barr, collected by A. Dalglish, pre 1901 (Clark, 1909); Dumfries and Galloway, Rockcliffe, collected by R.A. Crowson, 1966 (HM), Caerlaverock, collected by A. B. Duncan, 1984 (NMS), nr Dumfries, R. Service, 1879 (Service, 1879); East Lothian, Dunbar, collected by W. Evans, 1893 –1900 (Evans, 1901), and more widely across Scotland including Fife (NMS) and Kirkcudbrightshire(NMS).

Nomada marshamella
Moss, collected by R. Service, 1879 (Service, 1879) South Dumfriesshire, J. Murray circa 1940 (Murray, 1940); Stirlingshire/West Perthshire (1983); Argyllshire, 1988 (NBN), Kintyre, Tayvallich, 1988 (NBN) and more Renfrewshire, Kilbarchan, collected by F.J. Ramsay, 1944 and 1946 (NMS); Dunbartonshire, Gartlea, 1985 (NBN), Bonhill, collected by J.R. Malloch, 1901 (GM) and Milton on Campsie, collected by J. Cootcr, 1977 (GM); Dumfries and Galloway, Dalskairth and Lochar widely across Scotland including Perthshire (McGregor, 1893), North (SIRI) and South Ebudes (NBN).

Species	County	Location	Date	Collected by	Determined by	Specimen held
Andrena clarkella	Lanarkshire	Glasgow, Bunhouse Road, NS563663	01/04/2009	E.G. Hancock	C. Fiedler	HM
Bombus sylvestris	Lanarkshire	Glasgow, Provan Hall, NS669664	30/05/2009	J. Robinson	J. Robinson	GM
Colletes daviesanus	Lanarkshire	Glasgow, Binghams pond, NS554681	05/07/2009	J. Robinson	J. Robinson	GM
	Lanarkshire	Glasgow, Binghams pond, NS554681	26/07/2009	R. Weddle	C. Fiedler	HM
	Lanarkshire	Neeropolis, NS605654	07/07/2009	R. Weddle	C. Fiedler	HM
Lasioglossum calceatum	Lanarkshire	Glasgow, Commonhead Moss, NS697659	29/05/2009	J. Robinson	J. Robinson	GM
Lasioglossum fratellum	Lanarkshire	Glasgow, Commonhead Moss, NS697659	29/05/2009	J. Robinson	J. Robinson	GM
Lasioglossum smeathmanellum	Lanarkshire	Glasgow, NS599651	10/05/2009	R. Weddle	C. Fiedler	HM
Megachile willughbiella	Lanarkshire	Glasgow, Binghams Pond, NS554681	5/07/2009	J. Robinson	J. Robinson	GM
Nomada marshamella	Lanarkshire	Glasgow, Hayburn Lane, NS556676	24/5/2009	R. Weddle	C. Fiedlier	HM
Nomada marshamella	Lanarkshire	Glasgow, Provan Hall, NS669664, on garden wall by Andrena scotica nests	30/05/2009	J. Robinson	J. Robinson	GM

Table 1. Aeuleate specimens collected in Lanarkshire during 2009 fieldwork.

DISCUSSION

Western Scotland experienced mixed fortunes weather-wise during the summer of 2009, with 60% more rain than normal but warmer temperatures than either 2008 or 2007 (Met Office, 2009). On a number of days, we were met with ideal field conditions for surveying aeuleates, of especially warm and dry weather.

Initial searches on the BWARS database, Scottish Aculeates List and Glasgow Species Audit led us to believe that many of our finds were new records for Glasgow and possibly the wider area. Inspection of the three museum collections and historical documents revealed that much work has been carried out on aculeates in Scotland during the 20th century, but is not widely known about or cited. Indeed, many species that appeared of particular note were recorded previously, up to a century ago. These new records contribute to our knowledge of the spccies' distribution over time, and reassuringly for aculeate conservation, reveals that some populations may have persisted in the south of Scotland for over a century. *A. clarkella*, *B. sylvestris*, *L. fratellum*, *L. smeathmanellum*, *M. willughbiella* and *N. marshamella* have not previously been recorded from Lanarkshire. *C. daviesanus* and *L. calceatum* were thought to be new but turn out to have been here longer than expected.

Male and female solitary bees of the attractive, tawny-thoraxed *A. clarkella* were active at the start of April. They had excavated burrows beneath the scrubby borders of one the West End's car parks, adjacent to the river Kelvin. All the Scottish records, we examined, are from between early March and April. Their season in Scotland is February and May. Thcy are oligolectic on *Salix*, hencc the early season (Pers. Comm. Murdo Macdonald. October 2011). Although a new record for Lanarkshire, historically, *A. clarkella*

appears widespread in southwest Scotland. It has certainly been recorded from the majority of vice counties that border Lanarkshire over the last century, so could have been active but undetected in Glasgow for some time.

A *B. sylvestris* male, the four-coloured cuckoo bee, was caught flying in the gardens of one of Glasgow's oldest buildings, the Provan Hall on a scorching May day. Its major host species, *Bombus pratorum*, the early bumblebee was abundant in the grounds. This species has also been found across Scotland. It is a first record for Lanarkshire, although it was recorded from the adjoining counties of Dunbartonshire, at the beginning of the last century and Dumfriesshire in 1975. Given this and the abundance of potential hosts, it is unlikely that this species has only just arrived in Glasgow. Cuckoo bees are often overlooked or misrecorded as social bumblebees. The Scottish records we examined have all been between mid-May and September. These bees are known to be active in Scotland between March and October (Pers. Comm. Murdo Macdonald. October 2011).

C. daviesanus was found foraging once in the Necropolis and on two separate occasions at Bingham's pond in July 2009. Bingham's pond was an artificial boating lake with little wildlife interest. Since 2003 the Glasgow City Council's Biodiversity team has done extensive work to naturalise and enhance it. Many *C. daviesanus* bees, with their blond hairy thoraxes and banded abdomens, were observed foraging there on July 5th in the specially planted wildflower borders (Fig. 1). This species was not listed in the Glasgow Species Audit, so the 2009 sightings were believed to be new county and city records. However, when checking older specimens that had been recently identified in GM collections, a specimen collected in 1984 from Kelvingrove Park was discovered, collected by a former member of staff. These 1984 and 2009 sightings are the first for Lanarkshire, but there are scattered records from all over the country. Whilst these bees may have been exploiting the established green areas such as the Necropolis and Kelvingrove Park for a number of years, Bingham's pond has evidently become a valuable foraging site. All the Scottish records we examined were from between the beginning of July and the beginning of August for this species. This species may be active as early as June in Scotland (Pers. Comm. Murdo Macdonald. October 2011).

To the untrained eye, the *Lasioglossum* bees do not appear to be bees at all. Most species are very small and apparently unhairy, although do have patches or bands of hair on the abdomen on closer inspection. *L. calceatum* was found at Commonhead Moss Local Nature Reserve. It is one of the larger species of *Lasioglossum*. Males are more distinctive than females, with a narrow black and orange-red abdomen. Females have a more rounded abdomen with only tinges of orange-red colouration. Identification of museum specimens revealed that Richard Sutcliffe had collected *L. calceatum* from Glasgow Kelvingrove Park and the Botanical Gardens in 1983 and 1984 respectively, and from Dunbartonshire in 1986. Murray (1940) described it as common in south Dumfriesshire at the end of the 1930s. Modern and historical records reveal that this is a widespread species across Scotland, and further searching in the field is likely to reveal even more records.

Lasioglossum fratellum is a small, black bee with indistinct patches of hair on its abdomen. Modern and historic records have shown it to be widespread across Scotland. Our record from Commonhead Moss is the first for Lanarkshire but it has been found in the neighbouring counties of Renfrewshire, Stirlingshire, Ayrshire and Dunbartonshire. It forages on a range of flower species, such as daisies (*Bellis perennis*) and rosebay willowherb (*Epilobium angustifolium*) (Allen, 2006), which are broadly available, contributing to its wide distribution.

L. smeathmanellum has a characteristic metallic blue-green sheen over the thorax and abdomen (Edwards, 2005). Although not scarce or threatened, as it is common in England, its distribution in Scotland is more limited, being replaced by a closely related (and morphologically very similar) species, *L. cupromicans* further north (Edwards, 2005). Found in Glasgow's city centre, this is a new record for Lanarkshire. Research has revealed a number of records in nearby counties of Ayrshire, Dunbartonshire, Dumfriesshire and Midlothian, and more widely across Scotland. Clark (1909) described this species as fairly common at some sites in Ayrshire at the beginning of the 1900s. So it seems its distribution is more extensive than initially anticipated.

Like *C. daviesanus*, *M. willughbiella*, Willughby's leaf-cutting bee, was also observed on July 5th 2009 foraging in the wild flowers planted around Bingham's pond. There was a published record for this species from Darnley in the South of the city (Renfrewshire) from 1993 (Haneock, 1994) but no records since and nothing previously from Lanarkshire. The south west of Scotland is devoid of records according to the latest distribution maps (BWARS 2010, NBN 2010) but in addition to these recent records, this species has also been active in the adjoining counties of Dumfries and Galloway and Ayrshire over the last century. This species has been recorded between the end of May and end of August in Scotland so far.

Marsham's Nomad bee, *N. marshamella* was captured for the first time at the end of May in Hayburn Lane, a small green corridor in Glasgow's west end. There was a second record less than a week later, from Provan Hall in the east of the city, at the same site and date that the cuckoo bee, *B. sylvestris* sighting. About a dozen of these boldly banded, wasp-like bees were observed investigating entrances to nest burrows of the solitary bee *Andrena scotica* (= *A. carantonica)* in a

south facing garden wall. This species is a cleptoparasite, which parasitizes a few species of *Andrena*. The only host currently known from Glasgow (GSA, 2009) is *Andrena scotica*, which was first confirmed from a residential area in the West End in 2006 from a specimen submitted by Norman Grist (GM). These are the first records for any species of Nomad bees in Lanarkshire, however, in addition to the two Glasgow sightings, *N. marshamella* has been recorded widely across Scotland including from the neighbouring counties of Dunbartonshire, Renfrewshire, Stirlingshire and Dumfries and Galloway. Over 60 years ago Murray (1940) commented that it was the only Nomada he had met with in any number in Dumfriesshire. All the records we examined for this species in Scotland are from between early May and the end of June. They are however known to be active between April and July in Scotland (Pers. Comm. Murdo Macdonald. October 2011).

There are likely to be further interesting specimens in other museums and at other sites in the south west of Scotland relevant to this study. The authors would be interested to hear of them.

ACKNOWLEDGEMENTS

We would like to thank members of the Glasgow Natural History Society, Richard Weddle and Norman Grist and Glasgow Museums current and former staff, Richard Sutcliffe, Jonathan Cooter and Fred Woodward for their contributions of specimens; Geoff Hancock at the Hunterian museum for specimens, references and staff at NMS for access to SIRI and both the fore mentioned for access to their collections. Many thanks to Carl Clee of National Museum Liverpool, Mark Pavett of National Museum of Wales, and Mike Edwards for verification of species identifications. Thanks to the BWARS for their records and to BTCV for funding the Natural Talent Apprenticeship, through which the aculeate specimens at Glasgow Museums are far more accessible.

REFERENCES

Allen, G. (2006). *Lasioglossum fratellum*, 76-77; in Edwards, R. and Broad, G. (editors) Provisional atlas of the aculeate Hymenoptera of Britain and Ireland: Part 6. Centre for Ecology and Hydrology.

BWARS. (2010). Distribution maps for UK species available at http://www.bwars.com/maps_bees.htm. *Accessed in January 2010.*

Carter, A. E. J. (1901). Aculeate Hymenoptera in Perthshire. *Entomologist's Monthly Magazine* (1901) 37, 67 .

Clark, James. (1909). Notes on the Bees, Wasps and Ants of Ayrshire and the island of Arran. *Kilmarnock and Glenfield Ramblers Society Annals 1907-1910* 6, 38-66.

Edwards, M. (2005). *Lasioglossum smeathmanellum*, pp. 102-103 in Edwards, R. and Broad, G. (editors) Provisional atlas of the aculeate Hymenoptera of Britain and Ireland Part 5 Centre for Ecology and Hydrology.

Elliot, G. F. Scott, Laurie, M. and Murdoch, J. Barclay (editors). (1901). Fauna, Flora and Geology of the Clyde Area. Published by the Local Committee for the Meeting of the British Association.

Else, G. Handbook of the Bees of the British Isles (in preparation).

Evans, William. (1900). Scottish Aculeate Hymenoptera: Additions to the list. *Entomologist's Monthly Magazine* (1900) 66 .

Evans, William. (1901). *Mimesa dahlbombi* and other aculeates in Scotland. *Entomologist's Monthly Magazine* (1901) 37, 301.

Glasgow Species Audit (GSA). (2009). Available electronically from the Glasgow Museums Resource Centre, 200 Woodhead Road, South Nitshill Industrial Estate, Glasgow. G53 7NN Tel: 0141 276 9330, Fax: 0141 276 9305, E-mail: biological.records@csglasgow.org.

Hancock, E. G. (1994). Leafcutter bees *Megachile willughbiella* Kirby at Waulkmill Glen, Darnley Glasgow. *Glasgow Naturalist* 22 (4), 430.

Guichard, K. M. (1939). Aculeate Hymenoptera from the Highlands *Entomologist's Monthly Magazine* (1940) 76, 43-44.

Met Office. (2010). UK weather statistics available at www.metoffice.gov.uk. *Accessed in January 2010.*

McGregor, T. M. (1893). Notes on the aculeate hymenoptera, with a list of the wild bees and wasps collected in Perthshire in 1887. *Transactions of the Perthshire Society of Natural Science* (1893)72).

Murray, J. A. (1940). Dumfriesshire Aculeate Hymenoptera. *Entomologist's Monthly Magazine* (1940)76, 60-61.

NBN. (2010). The National Biodiversity Network for interactive maps of the distribution of British species available at http://www.nbn.org.uk/. *Accessed in January 2010.*

Rothney, G.A. James. (1906). Aculeate Hymenoptera at St Fillans and the Braes of Balquhidder, Perthshire. *Entomologist's Monthly Magazine* (1906) 257.

Scottish Aculeates List. (2010). List of Aculeates known from Scotland and their current status available at http://www.hbrg.org.uk/SAL/index.html. *Accessed in January 2010.*

Service, Robert. (1879). The aculeate hymenoptera of the district surrounding Dumfries. *The Scottish Naturalist* (1879-1880) 5, 63-68.

Stubbs, Alan. (2007). The Nomada test key. See the BWARS website http://www.bwars.com/bee_test_keys.htm. *Accessed in January 2010.*